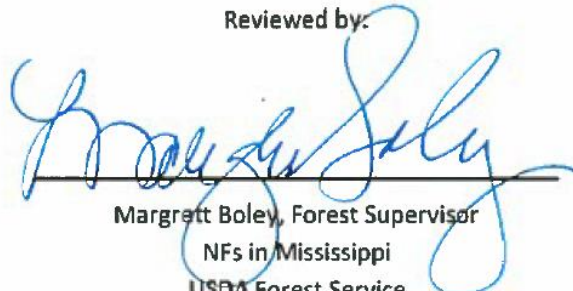


National Forests in Mississippi
Transportation System Analysis
Process (TAP) Report

August 2, 2016

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Unit Scale Transportation System Analysis Process (TAP) Report

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- Chief's Letter of Direction
- Southern Region Expectations
- 6th Level HUCs Watershed Condition Classifications and Priority Watersheds on the Forest
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A. Executive Summary

Objectives of Forest-Wide Transportation System Analysis Process (TAP)

The objectives of Forest-Wide TAP were to:

- identify key issues related to the NFs in Mississippi's transportation system, in particular affordability and cumulative effects;
- identify benefits, problems and risks related to the NFs in Mississippi's transportation system;
- identify management opportunities related to the existing transportation system to suggest for future consideration as National Environmental Policy Act (NEPA) decisions (examples included items such as road decommissioning within priority watersheds and needed aquatic passage improvement projects);
- create a map to inform the identification of the future Minimum Road System (MRS);
- Indicate the location of unneeded roads and possible new road needs.

(Note: Forest Service regulations at 36 CFR 212.5(b)(1) require the Forest Service to identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System (NFS) lands.)

Analysis Participants

The TAP was conducted by an interdisciplinary team with extensive internal participation, as well as participation by partners and the general public. The primary participants were:

- Sherelle Barber, NFsMS Team Lead
- Steve Bingham, Forest Engineer
- Bob Piazza, Forest Staff Officer
- Michael Esters, Bienville District Ranger
- Shelton Lewis, Bienville District Team Lead
- Steve Lee, Chickasawhay District Ranger
- Jessica Bane, Chickasawhay District Team Lead
- Andy Barwick, Chickasawhay District NEPA Coordinator
- Leslie Morgan, Delta District Ranger
- Shelton Whittington, Delta District Team Lead
- Benjamin Battle, De Soto District Ranger
- Caren Briscoe, Holly Springs and Tombigbee District Ranger
- Jim Schiller, Holly Springs and Tombigbee District Team Lead
- Bobby Claybrook, Holly Springs and Tombigbee District Recreation Program Specialist
- John Townsend, Holly Springs and Tombigbee District Fire Specialist
- Bill Oswalt, Holly Springs and Tombigbee District Wildlife and Fisheries Specialist

- Ralph Deweese, Holly Springs and Tombigbee District Engineering Technician
- Buddy Lowery, Holly Springs and Tombigbee District Timber Specialist
- Carl Kilcrease, Holly Springs and Tombigbee District GIS Specialist
- Kevin Lee, Holly Springs and Tombigbee District Soil and Water Specialist
- Bruce Prud'homme, Homochitto District Ranger
- Dave Chabreck, Homochitto District Team Lead
- Andy Hunter, Homochitto District Recreation Program Specialist
- Jay Pittman, Homochitto District Soil and Water Specialist
- Jeff Bein, Homochitto District Fire Specialist
- Bill Meriwether, Homochitto District Wildlife and Fisheries Specialist
- Jasin Wesberry, Homochitto District Engineering Technician
- Mike Sherman, Law Enforcement
- Rodney Brooks, Law Enforcement
- Lavader Petty, Law Enforcement
- Chris Ledoux, Law Enforcement
- Michael Everett, Frank Gagne, Carrie Beard, Ron Fisher, Ralph Pearce, John Wesley Crews, Others

Overview of the NFs in Mississippi's Road System

The NFs in Mississippi's road system currently comprises some 2,914 miles, providing access to approximately 1,183,702 acres of national forest, as well as to interspersed private tracts and nearby local communities. The system supports both recreation and resource management. It is comprised of a combination of old "public" roads, roads constructed to access timber sales and subsequent silvicultural activities, roads constructed to access recreation areas, and a variety of other routes. These system roads range from double lane paved roads to single lane gravel or native surface roads that may be useable by passenger cars, to high clearance routes, to travel ways that are closed for periods of time greater than one year. Funding for the construction or reconstruction of all types was generally provided either by congressional appropriations, or authorized as a component of a timber sale. Maintenance funding is primarily by congressional appropriations, although timber sales generally funds any maintenance required during the life of a particular sale operation.

Methodology

Each ranger district formed an interdisciplinary team to evaluate the district's road system. These teams represented many disciplines such as engineering, forestry, archaeology, fire management, wildlife, fisheries, etc. in order to get a wide range of perspectives on each road. Roads provide many benefits to both the Forest Service and the public. They provide access for administrative functions such as prescribed burning and timber sales, access to visitors for activities such as hunting, camping, hiking, and birdwatching, serve as fire breaks, and provide varied habitat as linear wildlife openings. On the other hand, there are many disadvantages to roads. They are expensive to maintain, increase the sediment discharge into streams, can decrease the feeling of solitude in an area, and their stream

crossings can be problematic for aquatic organisms. These factors and more were considered by each interdisciplinary team, along with public input and funding constraints, to identify the minimum road system necessary to reasonably accommodate all needs while at the same time being environmentally and financially sustainable. The National Forests in Mississippi's forest plan revision was in progress concurrent with travel analysis, which enabled the teams to consider current public comments submitted as part of the plan revision process. Public input was overwhelmingly in favor of keeping as many roads open as possible, mainly for hunting access.

Key Issues, Benefits, Problems and Risks, and Management Opportunities Identified

- **Current appropriations and supplemental revenue sources are not sufficient to adequately maintain NFs in Mississippi's 2,914 mile Road System as currently configured.** Without changes, the existing road system requires an annual expenditure of approximately \$4,391,697. Only about \$3,109,000 are currently available, (recent fiscal years average), resulting in a shortfall of about \$1,282,697 or 29% of the total dollars needed.
- **There is substantial system mileage which primarily serves either as access to private inholdings, or as general access to adjacent communities (approximately 147 miles, or 5% of the total).** As opportunities allow, jurisdiction and maintenance costs should be considered for transfer to the most appropriate entity in order to allow the limited maintenance funding to be applied most effectively to the system roads of the NFs in Mississippi.
- **Certain roads, particularly those located relatively low in the watersheds, may be causing undue stress to water quality** and associated aquatic organisms, especially if they cannot be regularly and properly maintained. This is particularly the case in watersheds that are classified as "impaired." There are 184 miles of forest roads located on impaired watersheds on the NFs in Mississippi, of which, 58 miles have been identified by the TAP for decommissioning consideration. In some cases, there appears to be opportunities to decrease the total system maintenance costs, while at the same time better protecting water quality by decommissioning those roads with the highest risk and least benefit.
- **There are a number of roads that will most likely be needed at some time in the future, but which do not appear to be needed for actions currently being proposed.** Storage of these roads (closure for at least a year, with only custodial maintenance provided) should be strongly considered. The TAP analysis suggests that about 51 miles should be considered for conversion to storage and custodial maintenance only until needed.
- **In order to meet budgetary limitations, some roads currently opened year round will need to be identified to be considered for seasonal closure (9 miles); and some roads currently maintained for passenger car use will need to be identified to be considered for conversion to high clearance use only (11 miles).**
- Relatively high road densities may be impacting some sensitive wildlife species in a few specific areas of the Forest. Overall, however, road densities do not exceed those allowed

by the Forest Plan. As configured the overall road density, exclusive of non-FS jurisdiction roads, is 1.58 miles/square mile, and the open road density is 0.89 miles per square mile.

- **Several roads or portions of roads may have to be closed due to insufficient bridge replacement funding.** There are 81 bridges on the Forest located on open roads, of which none appear to be load restricted or otherwise deficient.
- **Opportunities should be sought to increase road maintenance revenues** where possible through the use of stewardship contracts and partnerships, including volunteer groups, such as hunters, equestrian organizations, ATV user groups and others.

Comparison of Existing System to Minimum Road System as Proposed by the TAP

Refer to Appendix E for a summary of proposed changes to the existing road system suggested by the TAP, as information available to frame future NEPA analysis and decisions.

Next Steps

- TAP recommendations will be used to inform NEPA decisions, many of which will eventually be implemented in conjunction with various restoration projects on the Forest.
- Prior to implementing these recommendations, NEPA determinations will be conducted at the appropriate scale, using the TAP to inform issues, particularly cumulative effects and affordability.
- The road system should be revisited with an updated forest-wide TAP, probably on about a 10-year cycle, with the next one due by perhaps the year 2025.

B. Context

Alignment with National and Regional Objectives

Sub-Part “A” Travel Analysis is required by the 2005 Travel Management Rule (36 CFR 212.5). Forest Service Manual 7712 and Forest Service Handbook 7709.55-Chapter 20 provide specific direction, including the requirement to use a six step interdisciplinary, science-based process to ensure that future decisions are based on an adequate consideration of environmental, social and economic impacts of roads. A letter from the Chief of the Forest Service dated March 29, 2012 was issued to replace a November 10, 2010 letter previously issued on the same topic. It reaffirms agency commitment to completing travel analysis reports for Subpart A of the travel management rule by 2015, and also provides additional national direction related to this work, addressing process, timing and leadership expectations. The letter requires documentation of the analysis by a travel analysis report, which includes a map displaying the existing road system and possible unneeded roads. It is intended to inform future proposed actions related to identifying the minimum road system. The TAP process is designed to work in conjunction with other frameworks and processes, the results of which collectively inform and frame future decisions executed under NEPA. This letter, including a diagram which further illustrates the relationship between NEPA and TAP is included in Appendix F. The document entitled “Sub-Part “A” Travel Analysis (TAP), Southern Region Expectations, Revised to align with 2012 Chief’s

Letter” and attached in Appendix G, supplements the national direction for Forest Scale TAPs developed for the Southern Region. A forest roads analysis following the six step process was originally completed and certified in 2005. This document supplements the original 2005 analysis to follow new national and regional direction.

Coordination with Forest Plan

The current Forest Plan for the NFs in Mississippi was adopted in 2014. It provides specific direction for overall management of the NFs in Mississippi. The Forest-wide TAP tiers to the NFs in Mississippi’s Forest Plan by informing future NEPA actions that implement the Forest Plan and have transportation components. The forest plan has a stated goal of downgrading 6% of system roads within 6 years of the plan’s date. The proposed road system includes a total of 385 miles of downgrades, shown in the table below, which represents over 13% of the current system’s 2,914 miles of road.

Current Category	Proposed Category	Miles
4	3	102
3	2	118
2	1	107
1	Decommission	58
Total		385

The TAP has been informed by the Watershed Condition Framework, and likewise, the TAP is intended to inform future forest restoration activities, including watershed restoration. The current forest plan was developed concurrently with the TAP; the Forest’s original TAP submission was made in June 2014, just one month prior to the plan’s final signing. Extensive public involvement was conducted during the formulation of the current plan, allowing the Forest to use public meetings for the benefit of both the plan and the TAP. This fortunate coincidence of timing allowed the TAP ID Team to have a wealth of input from partners and the public during their analysis.

Budget and Political Realities

The roads located on the NFs in Mississippi are a combination of historic trails that have undergone improvement over the years, roads that were built in the decades of the sixties, seventies and eighties to access timber sales, roads constructed for access to communities, either internal or adjacent to the Forest, roads constructed by recreational users, and roads constructed or otherwise acquired through a variety of means to comprise the current system. As is the case for much of the rest of the infrastructure on the Forest, funding has been inadequate to properly maintain all of the Forest’s roads and bridges. In some cases, these roads and bridges have become superfluous to our administrative needs, and many no longer meet public needs either. Driven by budget limitations and the need to have a safe and efficient transportation system, changes to the current transportation system are becoming inevitable. The TAP process is an attempt to begin to identify a proposed

“minimum road system” (MRS) which will only come into place as NEPA decisions are made and then actual on-the-ground decisions are implemented. The MRS will probably change over time as well, as public needs and financial resources change. Therefore, it is expected that new Forest-wide TAP analyses will continue to be needed, probably on about a 10-year cycle.

Alignment with Watershed Condition Framework (WCF)

Along with the other national forests across the country, NFs in Mississippi recently conducted an analysis of its watersheds, categorized them as to their condition and prioritized them for future efforts at improvement. Three categories were identified: Class 1 – Functioning Properly, Class 2 – Functioning at Risk, and Class 3 – Impaired Function. These classifications were performed on watersheds at the 6th order hydrologic unit classification (HUC) according to standard procedures described in the “Watershed Condition Framework” technical guide, found at http://www.fs.fed.us/publications/watershed/Watershed_Condition_Framework.pdf. It was determined that 40 watersheds on the NFs in Mississippi are Class 1, 108 are Class 2, and 4 are Class 3. The Middle Creek- Black Creek Watershed was selected as a priority watershed for focus work in the next decade.

The forest-wide TAP analysis was heavily informed by the WCF. For example, roads located near streams within impaired watersheds, and especially priority impaired watersheds, were particularly considered as possible decommissioning candidates. Similarly, continuing watershed improvement work is intended to be informed in the future by the TAP.

C. Overview of the NFs in Mississippi and the Supporting Transportation System

General Description of the NFs in Mississippi Land Ownership Patterns, Land Use and Historic Travel Routes

The NFs in Mississippi is comprised of 1,183,702 acres, occupying almost 49% of the proclamation boundary. Almost all is forested, with about 6,046 acres (or 1%) being Wilderness or otherwise classified as Roadless, and 1,177,656 acres (or 99%) being available for active forest management. Interspersed within the proclamation boundary, and adjacent to the National Forest are several large tracts managed as TIMOs (Timber Investment Management Organizations) or REITs (Real Estate Investment Trusts) as well as some scattered large forest industry tracts, some small farms and a variety of other ownership types. There are a few small communities within the proclamation boundary as well, the larger ones being Crosby, Spanish Fort, Meadville, Bude, Forest, Betheden, Poplar Flat, Gum Springs, Potts camp, Hickory Flat, Lake Center, Brooklyn, McHenry, Perkinson, Sand Hill, Smithtown, Water Oak, and Richton. When the land came under the ownership of the NFs in Mississippi, it was riddled with a legacy of historic travel routes that were primarily located low in the watersheds, alongside stream channels, presumably as these were the simplest locations on which to construct primitive travel ways. Over the past few decades, the NFs in Mississippi has been slowly working towards relocating many of these roads up the slopes and away from the streams.

The lands of the NFs in Mississippi are administered by seven ranger districts, Bienville Ranger District, De Soto Ranger District, Homochitto Ranger District, Chickasawhay Ranger District, Delta Ranger District, Holly Springs Ranger District, and Tombigbee Ranger District. The number of acres administered by each district is indicated in the following table:

District	Acres	Roadless Acres
Bienville	178,542	0
De Soto	400,000	6,046
Homochitto	191,895	0
Chickasawhay	128,893	0
Delta	61,000	0
Holly Springs	156,132	0
Tombigbee	67,240	0
Totals	1,183,702	6,046

Table 1. Number of Acres Administered by District on the NFs in Mississippi

There are 13 major developed recreation areas on the Forest, including Marathon, Shongelo, Clear Springs, Okhissa Lake, Little Sunflower, Blue Lake, Airey Lake, Big Biloxi, Chewalla Lake, Choctaw Lake, Davis Lake, and Turkey Fork Lake. In addition, the Forest allows dispersed recreation on most of the national forest land. Also, there are 421 miles of trails, supporting a variety of uses, including OHVs, equestrian, biking, pedestrian, and mixed use. Motor vehicles are restricted to those roads shown on the official Motor Vehicle Use Map (MVUM) included in Section G, Appendix B.

Description of the NFs in Mississippi's Transportation System

Interstate Highways 20, 22, 55, 59, several Federal and State highways, including 4, 5, 15, 16, 25, 26, 28, 29, 30, 32, 33, 35, 42, 49, 57, 63, 67, 80, 84, 98, 167, 330, 433, 547, 550, 563, 605, and the Natchez Trace Parkway, and quite a number of roads under county jurisdiction traverse various parts of the NFs in Mississippi.

There are 2,914 total miles of National Forest system road under the jurisdiction of the NFs in Mississippi. This mileage is comprised of 664 miles suitable for passenger car use, almost all of which are open to the public on a year round basis, 846 miles only suitable for high clearance vehicular traffic, of which 846 miles are opened to the public and 44 miles which are at least seasonally closed. There are 1,273 miles on the system inventory that are closed for periods of time greater than one year, being in "storage" for future use when needed.

The Forest Service catalogs its roads in the official inventory, I-Web, by Maintenance Levels, loosely defined as follows:

- Maintenance Level 5 – Single or Double Lane Paved Roads w/ high degree of user comfort
- Maintenance Level 4 – Moderate User Comfort; primarily double lane aggregate roads with ditches
- Maintenance Level 3 – Lowest level maintained to accommodate passenger car traffic
- Maintenance Level 2 – Maintained primarily only to accommodate use by high clearance vehicles
- Maintenance Level 1 – Closed to all traffic for periods greater than one year.

Table 2 below shows the current break down of the NFs in Mississippi's road system by maintenance level:

	ML 5	ML 4	ML 3	ML 2	ML 1
Bienville	1.85	23.89	126.72	70.95	161.51
De Soto	0.29	0.82	272.64	296.62	129.13
Homochitto	2.22	11.66	78.24	179.22	435.79
Chickasawhay	2.24	68.46	72.89	195.61	116.10
Delta	0.00	0.00	32.29	0.50	54.39
Holly Springs	0.00	14.95	57.78	68.93	284.39
Tombigbee	0.00	4.67	23.58	34.14	91.22
Forest Totals	6.60	124.45	664.14	845.97	1,272.53

Table 2: NFs in Mississippi's Road System Mileage by Maintenance Level.

Private and Coop Roads

Certain roads located on the NFs in Mississippi are needed to provide access to private tracts of land, or by municipalities or large private landowners in cooperation with the Forest. The maintenance responsibility for and jurisdiction of these roads are identified in the official inventory. Generally, costs for maintaining these roads are pro-rated to the appropriate benefitting entity, as further specified in the enabling agreements.

Unauthorized Roads

At any given time, roads may exist on the landscape that are not necessarily shown in the inventory or on an official map. These roads are considered to be unauthorized roads, unneeded for use by the NFs in Mississippi. They are subject to decommissioning at any time funding becomes available for that purpose.

Road Maintenance Funding

The NFs in Mississippi's maintains its road system with a variety of funding sources. Based on three year averages and current trends, the table below details what can be considered a typical fiscal year's road maintenance funding.

Source	Amount
CMRD	\$1,505,000
CMLG	\$200,000
CWF2	\$190,000
Oil & Gas	\$15,000
Timber Sales	\$909,000
Partners/Users	\$100,000
CFLRP	\$190,000
Total	\$3,109,000

Table 3: Typical Unit Funding (Annual) for Road Maintenance on the NFs in Mississippi

D. Cost of Operating and Maintaining the NFs in Mississippi's Roads and Bridges

Operations Costs

As indicated in the previous section, there is on an annual basis a total of approximately \$3,109,000 available with which to operate and maintain the NFs in Mississippi's road system. Of this, approximately \$893,000, or 29% is required in order to cover fixed costs, including management salaries, rent, fleet, travel and training, and cost pool contributions. This amount also covers items such as data management, contract preparation and administration and upward reporting. Regardless of the size of the road system being managed, this base amount is required. This leaves only about \$2,216,000 to go on the ground for actual maintenance of the road system, and it must cover replacement of deficient bridges as well.

Road Maintenance Costs

The primary components of road maintenance on the NFs in Mississippi include (in addition to inspections) 1) blading and ditching, 2) surfacing (repaving in the case of ML 5), 3) signs and markings, 4) drainage structures, and 5) mowing and brushing. Table 3 displays typical unit costs for these items on the NFs in Mississippi road system by maintenance level:

	ML 5	ML 4	ML 3	ML 2	ML 1
Inspections	\$0	\$0	\$0	\$0	\$0
Blading and Ditching	\$200	\$800	\$800	\$100	\$0
Surfacing	\$8,000	\$2,000	\$2,000	\$100	\$0
Signs and Markings	\$50	\$50	\$50	\$25	\$0
Drainage Structures	\$250	\$250	\$250	\$100	\$0
Mowing and Brushing	\$500	\$500	\$500	\$250	\$25
Totals	\$9,000	\$3,600	\$3,600	\$575	\$25

Table 4: Typical Unit Costs (Annual) for Road Maintenance Components on the NFs in Mississippi

Bridge Maintenance and Reconstruction Costs

The NFs in Mississippi has 81 bridges. These have to be inspected every other year, at an average cost of about \$1,003 per bridge. At the present time, none are either known or suspected to be load limited and need to be replaced because they are on roads intended to be left open to traffic. (In the interim, bridges suspected of being load limited will be load rated and posted until funding for replacement can be obtained). Typical bridge replacement costs for the NFs in Mississippi's transportation system are about \$ 2,899 per linear foot for a typical two lane bridge. These costs need to be added to the total road maintenance costs above to get a true picture of the total road and bridge maintenance costs for the next 10 years on the NFs in Mississippi.

Total Cost of Operating and Maintaining the NFs in the Mississippi's Roads and Bridges to Standard

Combining the information from the previous sections results in the following table which shows the total annual cost to maintain the NFs in Mississippi's roads and bridges to standard as the system currently exists:

Item	Number	Unit Cost	Total Cost
Fixed Cost to Operate	1	\$893,000	\$893,000
Maintenance of Level 1 Roads	1,273	\$25	\$31,825
Maintenance of Level 2 Roads	846	\$575	\$486,450
Maintenance of Level 3 Roads	664	\$3,600	\$2,390,400
Maintenance of Level 4 Roads	124	\$3,600	\$446,400
Maintenance of Level 5 Roads	7	\$5,800	\$63,000
Inspection of ½ of Bridges each Year	40.5	\$1003	\$40,622
Replacement of Deficient Bridges	0.20 per Year, 69' Av. Length	\$200,000	\$40,000
Total Annual Cost			\$4,391,697

Table 5: Total Annual Cost to Maintain the NFs in Mississippi's Roads and Bridges

Note: Compare current available budget of \$3,109,000 to the needed amount of \$4,391,697.

E. Assessment of Issues, Benefits and Risks

Financial

The primary financial issues relate to the inability to adequately maintain the existing road system with current funding sources. As indicated previously, there is on an annual basis a total of only about \$3,109,000 available with which to operate and maintain the system, whereas the needed funding for the system as currently configured is about \$4,391,697. As a result, deferred maintenance continually accrues on the system, but more importantly, it is not possible to maintain Best Management Practices (BMPs) required to adequately protect water quality and associated aquatic life. Meanwhile, roads and bridges are becoming unsafe and are having to be closed, and as a result, the system is failing to meet the needs of both the recreating and travelling public, and to provide for adequate resource access for forest management activities, including prescribed fire and fire suppression.

Environmental and Social

The primary issues in the environmental arena relate to 1) erosion of the roadbed, cut slopes, fill slopes and ditches, with the resulting sediment discharge affecting water quality and associated aquatic resources; 2) in some cases, road density effects on certain wildlife species, such as bear; and 3) the roads serving as a conduit for invasive species. In the social arena, the effects are primarily the demand for adequate access, sometimes offset by the need for providing solitude. Additionally, law enforcement faces challenges due to the high demand. Access is needed by a wide variety of forest users, including hikers, hunters, fishermen and other recreationists, as well as for forest management activities, such as restoration projects and fire suppression. Also, roads require surveillance, as they can easily become sites for crime, illegal dumping and similar activities.

Safety and Function

The primary issues related to safety and function of the NFs in Mississippi's road system include 1) maintenance of a clear and smooth travel way, 2) access in the proximity of the use, 3) steep road grades, 4) functioning of the drainage features, 5) width and stability of the road bed, 6) proper signs and markings, and 7) structurally and functionally sufficient bridges.

Measurement and Rating

Benefits and Risks of the overall system were tabulated and appear in Table G1 of the Appendices. The standard list of questions in the *FS-643 (August 1999)- Roads Analysis: Informing Decisions About Managing the National Forest Transportation System* was used as a guide to further assist in identifying the benefits and risks. The degree of risk was rated subjectively as being high, medium or low for the system by appropriate specialists. Then, after considering the entire system, each road was also considered. Those with particular issues, benefits and/or risks different from those of the entire system were listed and further described below for further consideration. As related projects become identified at some time in the future, this list may be referenced to inform projects or proposed changes in the Minimum Road System.

The following individual roads or groups of roads and their associated issues were identified by this TAP:

- Roads numbered 607G, T4, 606A, 606G, 617A, 649B, 661F are roads that are not necessary for public travel and are recommended for decommissioning or converting from either OML 2 or 3 to OML 1.
- Roads numbered 606K, 607B, 607C, 618F, 625A, 635C, 638J, 638K, 652, 654C, 654F, 658A, 661E, 668B, 822A, 827N1, and 835C are no longer needed for either public travel or agency resource management, so decommissioning is recommended.
- Road 613A is classified as an OML 3 and should be changed to an OML 2.
- Road 606J is an OML 1 road, but it accesses a cemetery and needs to be converted to an OML 2.

- The majority of open Forest Service roads are can possibly be transferred to another jurisdiction as they access private property, communities, utilities, etc. The change of jurisdiction should, in most cases, be to county but local counties are reluctant to take on this responsibility as they too lack funds for maintenance. There are two roads specifically noted as needing to be converted to another jurisdiction. Road 609D should be converted to private jurisdiction through a special use permit and 810B should be converted to county jurisdiction.
- Road 721 is a remote road that only access 3 dispersed campsites. This road could be converted to an OML 2. It would not affect hunters who are the main users of those campsites. This reduction and possibly making it seasonal could produce some savings.
- Road 710B accesses a trail head and the South Greentree Reservoir. It can be converted to a lower maintenance level to produce some savings. The reduction would increase travel time to the parking area.
- Road 703D accesses a trail head and Greentree Reservoir project. Seasonally closing the road can reduce some costs. Possible Downgrade to OML 2 although that may not follow direction on reduction of highly used roads.
- Road 706J can be closed seasonally although it rarely, if ever, receives CMRD dollars.
- Roads numbered 909C, 920, 968-2 are roads that are not necessary for public travel and are appropriate to be decommissioned or converted from OML 2 to OML 1.
- Roads numbered 9100, 9101, 9102 are no longer needed for either public travel or agency resource management so they can be decommissioned.
- Road number 954D is incorrectly labeled in INFRA and needs to be changed to road number 964D
- Road number 954D is not in INFRA and needs to be added in as an OML 1 road.
- Road 954I is in INFRA as a closed road. In actuality, a portion of this road is being managed as an OML 2 and needs to remain in this category. This would just be a correction in INFRA.

F. Recommendations and Proposed Mitigation Measures

Rationale Used to Arrive at Proposed Minimum Road System

The Chief's March 29, 2012 letter reaffirms that "the Agency expects to maintain an appropriately sized and environmentally sustainable road system that is responsive to ecological, economic, and social concerns. The national forest road system of the future must continue to provide needed access for recreation and resource management, as well as support watershed restoration and resource protection to sustain healthy ecosystems." Budget realities being what they are, roads which are not really needed cannot be supported in the future. Roads that primarily provide access to the public or to a local community need to be considered for transfer of maintenance responsibility, as appropriate. In this analysis, a total of 2 miles were identified for consideration of transfer of maintenance responsibility. Roads that appear to be likely unneeded because they have little benefit or create a high risk to various environmental or social values were flagged for consideration as decommissioning candidates. There are 58 miles in this category. Roads that did not appear to be

currently needed for project access during the next decade, and which appear currently to be receiving extremely low use by the public or which appear to not be otherwise needed for management purposes such as fire suppression access were flagged to be considered for storage; there are 51 miles in this category. Some roads which are primarily needed only for administrative use, or by hunters and which are currently useable by passenger vehicles were recommended to be considered for conversion to the high clearance. About 11 miles were identified that should be considered in this category. Roads which are receiving the highest amount of use, especially by the motoring public, or which access major developed recreation areas, should probably not be downgraded in general.

Inclement weather has a particularly costly impact on native and gravel surfaced roads. Therefore, to the extent possible, roads should be identified for seasonal closure. The TAP recommends that a minimum of 9 miles that are currently opened year-round be identified and converted to seasonally closure.

Miles by ML Proposed as Unneeded, by Watershed Condition Class

Table G6 in the Appendix J lists roads proposed as “likely not needed”, sorted by the condition of the watershed in which they lie, and with an indication of which ones are located in priority watersheds. The total number of miles on the NFs in Mississippi which have been suggested as “likely not needed” by the TAP is 58. The number of likely not needed miles in “at risk” and “impaired” watersheds are 2 and 53, respectively. None of the likely not needed miles are in the priority watershed.

Suggested Conversion of Existing Road System to Minimum Road System

Table G4 in the Appendix E lists the existing road system miles by maintenance level, and then proposes changes which respond to the rationale above to comprise the future minimum road system. Although some roads have been suggested to comprise these changes, there are others which have not yet been identified. During the next decade, the suggested changes in overall road system makeup should inform projects, and additional individual road change proposals will be identified, with the goal of achieving the proposed minimum road system, and associated financial sustainability as quickly as is practical.

When maintaining the forest roads located on the NFs in Mississippi, the following Best Management Practices should be adhered to as a minimum:

- National Best Management Practices for Water Quality Management on Forest System Lands
- Applicable State Best Management Practices
- Best Management Practices listed in the current Forest Plan.
- Completed Watershed Action Plans

G. Appendices

- A. Maps of Roads Likely Needed/ Unneeded For Future Use
- B. Motor Vehicle Use Map(s) MVUMs
- C. Tabular Summary of Existing Road System Showing Benefits and Risks
- D. Spreadsheets of Existing Road System and Suggested MRS showing Maintenance Costs
- E. Comparison of Existing and Suggested Minimum Road Systems (miles by ML)
- F. Chief's Letter of Direction
- G. Southern Region Expectations
- H. 6th Level HUCs Watershed Condition Classifications and Priority Watershed on the Forest
- I. Watershed Action Plan
- J. Likely Unneeded Roads by Watershed Classification

Appendix A: Maps of Roads Likely Needed/ Not Needed For Future Use

Appendix B: Motor Vehicle Use Map(s) MVUM

Bienville Ranger District: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5438500.pdf

Chickasawhay Ranger District: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5438501.pdf

De Soto Ranger District: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5438504.pdf

Delta Ranger District: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5438503.pdf

Holly Springs Ranger District: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5438506.pdf

Homochitto Ranger District: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5438507.pdf

Tombigbee Ranger District: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5438508.pdf

Appendix C: Tabular Summary of Existing Road System Showing Benefits and Risks (Table G1)

Benefits	Relative Degree of Benefit	Risks	Relative Degree of Risk	Concise Description of the Issue	Suggested Risk Mitigation Measures
Access for Proposed Projects	High				
Access for General Forest Management	High				
Access for Fire Suppression	High				
Access for Developed Rec	High				
Access for High-Clearance	Medium				
Access to Surrounding	High				
		Surface Erosion	Medium	Surface Erosion	Ensure that culverts and ditches are functional
		Ditch Erosion	Medium	Ditch Erosion	Effective maintenance of roads and ditches
		Stream Sedimentation	Medium	Sediment in Streamcourse	Use of AOP practices
		Effects on Wildlife	Low	Disconnection from habitat	Use of AOP practices
		Conduit for Invasives	Medium	Spreading of Invasive Species	Continue to treat invasive species
		Access for Vandals	Medium	Destruction of FS Property	Increase Law Enforcement / Prosecution
		Access for Dumps	Medium	Dump Sites	Increase Law Enforcement / Prosecution; Decrease Access to Locations
		Access for Drug Activities	Medium	Planting of Illegal drugs	Increase Law Enforcement / Prosecution
		Access for Other Illegal Activities	Low	Taking of Artifacts / Wildlife	Increase Law Enforcement / Prosecution

Appendix D: Spreadsheets of Existing Road System and Suggested MRS Showing Maintenance Costs (Tables G2 and G3)

Annual Cost of Maintaining Roads and Bridges

Operation Maintenance Level	Miles By Operation Maintenance Level	Unit Maintenance Cost	Total Annual Maintenance Cost	Number Of Bridge Replacements (Next 10 Years)	Average Replacement Cost	Total Replacement Cost	Average Annual Cost Of Bridge Replacements	Average Annual Road & Bridge Maintenance Cost
1	1,273	\$25	\$31,825	-	-	-	-	\$31,825
2	846	\$575	\$486,450	-	-	-	-	\$486,450
3	664	\$3,600	\$2,390,400	1	\$200,000	\$200,000	\$20,000	\$2,410,400
4	124	\$3,600	\$446,400	1	\$200,000	\$200,000	\$20,000	\$466,400
5	7	\$9,000	\$63,000	-	-	-	-	\$63,000
TOTALS	2,914		\$3,418,075	2	\$200,000	\$400,000	\$40,000	\$3,458,075

Annual Cost of Maintaining Suggested Future Minimum Road System

Operation Maintenance Level	Miles By Operation Maintenance Level	Unit Maintenance Cost	Total Annual Maintenance Cost	Number Of Bridge Replacements (Next 10 Years)	Average Replacement Cost	Total Replacement Cost	Average Annual Cost Of Bridge Replacements	Average Annual Road & Bridge Maintenance Cost
1	1,322	\$25	\$33,050	-	-	-	-	\$33,050
2	857	\$575	\$492,775	-	-	-	-	\$492,775
3	648	\$3,600	\$2,332,800	1	\$200,000	\$200,000	\$20,000	\$2,352,800
4	22	\$3,600	\$79,200	1	\$200,000	\$200,000	\$20,000	\$99,200
5	7	\$9,000	\$63,000	-	-	-	-	\$63,000
TOTALS	2,856		\$3,000,825	2	\$200,000	\$400,000	\$40,000	\$3,040,825

Appendix E: Comparison of Existing and Suggested Minimum Road System Miles by Maintenance Level (Table G4)

Operation Maintenance Level	Existing Road System Miles	Minimum Road System Suggested Miles	Comments
1	1,273	1,322	None or minimum maintenance cost, no regular maintenance
2	846	857	Increase of mileage due to the lowering of other maintenance levels
3	664	648	Reduces maintenance costs by decreasing the number of roads open and maintained for passenger car use
4	124	22	Reduction in maintenance costs by allowing most of these miles to decrease in user comfort and require longer travel times
5	7	7	No Change
Likely Not Needed		58	Decommissioning OML 1 roads
Totals	2,914	2,856	

Of the 2,914 miles of existing roads on the Forest, only 58, or 2%, have been identified in this report as candidates for decommissioning. However, this number is misleading due to the proactive approach the forest has taken in the immediate past in regards to unneeded roads. The table below summarizes the road decommissioning performed on the Forest recently:

Fiscal Year	Miles of System Roads Decommissioned	Miles of Non-System Roads Decommissioned	Totals
FY10	80	166	246
FY11	23	0	23
FY12	46	70	116
Totals	149	236	385

Table G5: Miles of Road Recently Decommissioned

If the miles of decommissioned system road in Table G5 were taken into account, the ratio of roads either decommissioned or targeted for decommissioning to total roads would be $(58 + 149) / (2,914 + 149) = 6.8\%$

The Forest has been very proactive in removing unneeded roads. 149 miles of system road is a very significant number; adding to that the additional 236 miles of non-system road decommissioned gives an indication of the Forest's commitment to watershed restoration and protection through the use of road decommissioning.

Appendix F: Chief's Letter of Direction

File 2300/2500/7700
Code:
Route
To:

Date: March 29, 2012

Subject: Travel Management, Implementation of 36 CFR, Part 202, Subpart A (36 CFR 212.5(b))

To: Regional Foresters, Station Directors, Area Director, IITF Director, Deputy Chiefs and
WO Directors

This letter is to reaffirm agency commitment to completing a travel analysis report for Subpart A of the travel management rule by 2015 and update and clarify Agency guidance. This letter replaces the November 10, 2010, letter on the same topic.

The Agency expects to maintain an appropriately sized and environmentally sustainable road system that is responsive to ecological, economic, and social concerns. The national forest road system of the future must continue to provide needed access for recreation and resource management, as well as support watershed restoration and resource protection to sustain healthy ecosystems.

Forest Service regulations at 36 CFR 212.5(b)(1) require the Forest Service to identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System (NFS) lands. In determining the minimum road system, the responsible official must incorporate a science-based roads analysis at the appropriate scale. Forest Service regulations at 36 CFR 212.5(b)(2) require the Forest Service to identify NFS roads that are no longer needed to meet forest resource management objectives.

Process

Travel analysis requires a process that is dynamic, interdisciplinary, and integrated with all resource areas. With this letter, I am directing the use of the travel analysis process (TAP) described in Forest Service Manual 7712 and Forest Service Handbook (FSH) 7709.55, Chapter 20. The TAP is a science-based process that will inform future travel management decisions. Travel analysis serves as the basis for developing proposed actions, but does not result in decisions. Therefore, travel analysis does not trigger the National Environmental Policy Act (NEPA). The completion of the TAP is an important first step towards the development of the future minimum road system (MRS). All NFS roads, maintenance levels 1-5, must be included in the analysis.

For units that have previously conducted their travel or roads analysis process (RAP), the appropriate line officer should review the prior report to assess the adequacy and the relevance of their analysis as it complies with Subpart A. This analysis will help determine the appropriate scope and scale for any new analysis and can build on previous work. A RAP completed in accordance with publication FS-643, "Roads Analysis: Informing Decisions about Managing the National Forest Transportation System," will also satisfy the roads analysis requirement of Subpart A.

Results from the TAP must be documented in a **travel analysis report**, which shall include:

- A map displaying the roads that can be used to inform the proposed action for identifying the MRS and unneeded roads.
- Information about the analysis as it relates to the criteria found in 36 CFR 212.5(b)(1).
Units should seek to integrate the steps contained in the Watershed Condition Framework (WCF) with the six TAP steps contained in FSH 7709.55, Chapter 20, to eliminate redundancy and ensure an iterative and adaptive approach for both processes. We expect the WCF process and the TAP will complement each other. The intent is for each process to inform the other so that they can be integrated and updated with new information or where conditions change. The travel analysis report described above must be completed by the end of FY 2015.

The next step in identification of the MRS is to use the travel analysis report to develop proposed actions to identify the MRS. These proposed actions generally should be developed at the scale of a 6th code sub-watershed or larger. Proposed actions and alternatives are subject to environmental analysis under NEPA. Travel analysis should be used to inform the environmental analysis.

The administrative unit must analyze the proposed action and alternatives in terms of whether, per 36 CFR 212.5(b)(1), the resulting road system is needed to:

- Meet resource and other management objectives adopted in the relevant land and resource management plan;
- Meet applicable statutory and regulatory requirements;
- Reflect long-term funding expectations;
- Ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance.

The resulting decision identifies the MRS and unneeded roads for each sub-watershed or larger scale. The NEPA analysis for each sub-watershed must consider adjacent sub-watersheds for connected actions and cumulative effects. The MRS for the administrative unit is complete when the MRS for each sub-watershed has been identified, thus satisfying Subpart A. To the extent that the sub-watershed NEPA analysis covers specific road decisions, no further NEPA analysis will be needed. To the extent that further smaller-scale, project-specific decisions are needed, more NEPA analysis may be required.

A flowchart displaying the process for identification of the MRS is enclosed with this letter.

Timing

The travel analysis report **must be completed by the end of FY 2015**. Beyond FY 2015, no Capital Improvement and Maintenance (CMCM) funds may be expended on NFS roads (maintenance levels 1-5) that have not been included in a TAP or RAP.

Leadership

The Washington Office lead for Subpart A is Anne Zimmermann, Director of Watershed, Fish, Wildlife, Air and Rare Plants. Working with her on the Washington Office Steering Team are Jim Bedwell,

Director of Recreation, Heritage, and Volunteer Resources, and Emilee Blount, Director of Engineering. I expect the Regions to continue with the similar leadership structures which have been established.

Your leadership and commitment to this component of the travel management rule is important. Together, we will move towards an ecologic, economic, and socially sustainable and responsible national road system of the future.

/s/ James M. Pena (for):
LESLIE A. C. WELDON

Deputy Chief, National Forest System

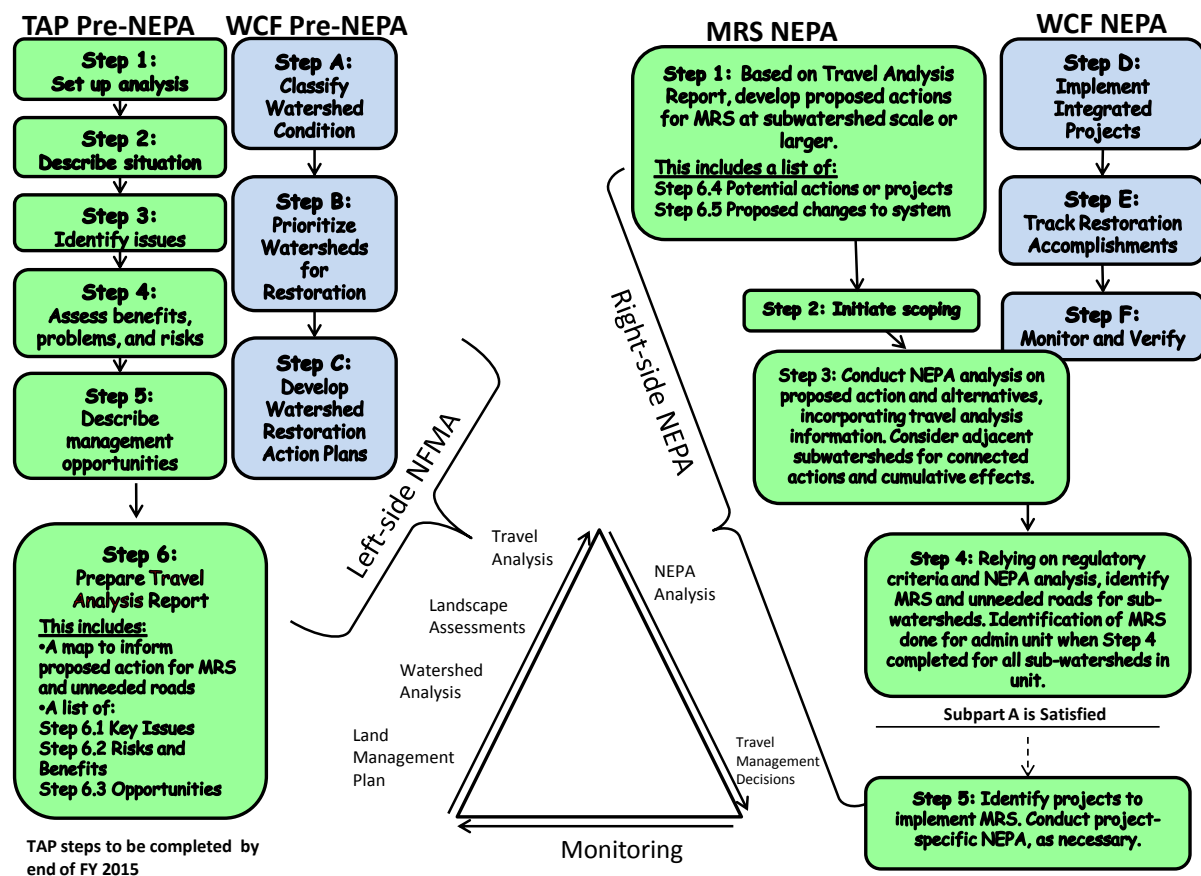


Figure 1: Relationship between NEPA and TAP

Appendix G: Southern Region Expectations

Sub-Part “A” Travel Analysis (TAP) Southern Region Expectations Revised to align with 2012 Chief’s Letter

- A. Background. During the period 2005 - 2010 the National Forests of the Southern Region successfully completed Sub-Part “B” (Designation of Roads, Trails and Areas for Motor Vehicle Use) Travel Analysis. The result was a set of Motor Vehicle Use Maps (MVUMs) which prescribe the Forest Service roads that allow traffic; and in doing so it also prohibited cross-country travel by off-highway vehicles (OHVs). Forests are now beginning work on Sub-Part “A” (Administration of the Forest Transportation System) Travel Analysis to identify the minimum road system needed for safe and efficient travel and for the protection, management and use of NFS lands; and also to identify roads no longer needed to meet forest resource management objectives.

TAP analysis identifies risks and benefits of individual roads in the system, but especially cumulative effects and affordability of the entire system. Consideration is given to the access needed to support existing Forest Plans, and for informing future Forest Plans and resulting projects. TAP is intended to identify opportunities to assist managers in addressing the unique ecological, economic and social conditions on the national forests and grasslands.

- B. Agency Direction. Sub-Part “A” Travel Analysis is required by the 2005 Travel Management Rule (36 CFR 212.5). Forest Service Manual 7712 and Forest Service Handbook 7709.55 Chapter 20 provides specific direction, including the requirement to use a six step interdisciplinary, science-based process to ensure that future decisions are based on an adequate consideration of environmental, social and economic impacts of roads. A letter from the Chief of the Forest Service dated March 29, 2012 was issued to replace a November 10, 2010 letter previously issued on the same topic. It reaffirms agency commitment to completing travel analysis reports for Subpart A of the travel management rule by 2015, and also provides additional national direction related to this work, addressing process, timing and leadership expectations. The letter requires documentation of the analysis by a travel analysis report, which includes a map displaying the existing road system and possible unneeded roads. It is intended to inform future proposed actions related to identifying the minimum road system. The TAP process is designed to work in conjunction with other frameworks and processes, the results of which collectively inform and frame future decisions executed under NEPA. These other analyses and procedures include Watershed Analysis Framework and mapping; Recreational Framework planning and analyses; and forest-wide planning under the new Planning Rule. This document (Southern Region Expectations) supplements the national direction for Sub-Part “A” TAPs developed for the Southern Region.
- C. Geographic Scale. Like smaller scale road analyses (RAPS) that have been underway at the project level, TAPs consider economic, environmental and social effects of roads. Analysis at the smaller project scale, however, does not adequately address cumulative effects and affordability. The Chief’s

letter requires that proposed NEPA actions be informed by work at the 6th order HUC watershed as a minimum. Southern Region Expectations are for a Unit TAP at the District level or equivalent; and since budgets are generally allocated to the Forest level, District analyses are not considered complete until all other Districts on the same Forest are also complete and have been integrated to create a Forest Scale TAP. As projects which involve travel (road) decisions are subsequently proposed on a unit, additional project level analysis will be required in advance of associated NEPA decisions only if the proposal varies substantially from the Unit Scale TAP covered by it. The purpose would be to show any additional impact on cumulative effects and affordability.

- D. Process, Review and Approval. Forests Interdisciplinary Teams (IDTs) are expected to conduct analyses, with guidance and review by the Regional Office TAP Review Team (members listed below). Standard boilerplate, spreadsheets and Executive Summary format will be developed by the Review team for incorporation into the TAP reports. Final review will be by the Forest Supervisor, indicating that the analyses comply with national and regional direction. Upon completion of the last District TAP on a Forest, the Forest Supervisor needs to submit a forest-wide Executive Summary and verify that the cumulative results meet the expectations defined in this guidance.

The Regional TAP Review Team consists of Team Leader Paul Morgan (Engineering), Emanuel Hudson (Biological and Physical Resources), Mary Hughes Frye (Recreation), Paul Arndt (Planning) and various other ad hoc members as needed. They will submit their review comments to the TAP Steering Team prior to officially conveying them to the Forest. The Steering Team will be responsible for overall direction and oversight of the process. This team consists of Randy Warbington, TAP Steering Team Lead and Director of Engineering, Dave Schmid, Director of Biological and Physical Resources, Chris Liggett, Director of Planning, and Ann Christensen, Director of Recreation as well as George Bain, Forest Supervisor on the Chattahoochee Oconee NF's and Steve Bekkerus, Regional Legislative Affairs Specialist.

- E. Information Systems. Analysis will be based upon field-verified spatial data (GIS, or Geographic Information System road and trail layers), and official tabular data (from I-Web, the corporate Forest Service data base) as applicable. ARC Map products will be included as a part of all completed Unit Scale TAPs, and will be provided to the Regional Office TAP review team as a part of the final TAP report.
- F. Access. As prescribed by 16USC532 the Forest Roads and Trails Act TAPs should identify an adequate system of roads and trails to provide for intensive use, protection, development, and management of National Forest System lands. As such, they should address user safety and environmental impacts, and provide for an optimum balance of access needs and cost. Roads, trails and bridges that are unsafe and where unacceptable risks cannot be eliminated or mitigated due to a lack of funding should be identified for closure or possible decommissioning. Unneeded, temporary and unauthorized routes should be identified for possible decommissioning. TAPs should support current Forest Plan direction and anticipate future Forest Plan analysis needs, as well as Recreational Framework planning and analyses. As unit scale TAPs are completed, associated MVUMs must be reviewed. After appropriate NEPA decisions are made to implement

TAP recommendations, future MVUM revisions need to be revised to assure that they are in agreement with those decisions.

- G. Environmental. One major analysis component of the TAPs is impact of the road system on water quality. In those cases where high road densities on National Forest lands are a major factor in causing watersheds to be at risk or impaired, some roads should be identified for decommissioning in order to reduce the impacts and change the classification. Also, it should be recognized that some existing roads are poorly located and should be eliminated, while some new roads might be needed to replace them and provide essentially equivalent access in better locations, generally farther away from live streams or wetlands. The Watershed Condition Framework should inform each unit's travel analysis. An overriding objective for all roads should be compliance with provisions cited in National Best Management Practices for Water Quality Management on National Forest System Lands, April 2012.

While a reduction in maintenance levels may be a desired option for cost reduction, it is not an appropriate strategy when it results in more environmental impacts. Similarly, changes in recreational use should be considered, especially for roads that cannot be maintained to standard and which may begin to attract challenge-oriented four-wheelers that create even further impacts on the environment and on the road.

- H. Financial. Units should consider all expected sources of funding available to maintain the road system to appropriate standards (based upon 3 year history and current trends), and include all costs that are required to comply with applicable Best Management Practices (BMPs) for their maintenance. Include associated bridge maintenance as well, and replacement costs for those routes which include bridges that are deficient or expected to need major work in the next ten year period. Identify and account for fixed costs (program management, fleet, etc.) when analyzing financial feasibility. Ultimately units must balance the costs of maintaining the identified system such that the recommendation will not result in accrual of deferred maintenance on roads and bridges once the TAP is implemented (i.e. there should be a zero balance between anticipated maintenance revenue and anticipated maintenance cost on an annual basis).

The focus of this analysis should not be primarily on disinvestment, i.e. just reducing passenger car roads to high clearance roads in order to meet funding constraints. Roads receiving minimal maintenance have the high likelihood, at least those roads located relatively low in the watershed, of creating additional siltation impacts. They can also have unintended consequences for recreation management. Therefore a better strategy might be to identify roads not required for current operations but which might be needed at some time in the future for seasonal or intermittent closure, or "storage". Other strategies might include scheduling maintenance over a two to three year cycle on less used roads, adding seasonal restrictions, identifying roads to transfer to state or local jurisdiction, and identifying unneeded roads for possible decommissioning. Total mileage of high clearance roads should not generally increase over the amount in the current system unless it is determined that there has been substantial maintenance level "creep" over the years and therefore a substantial increase in high clearance roads is warranted. However it is expected that the number of roads identified to be placed in storage will generally increase from the current level.

Finally it should be noted that similar to the road system, the trail system is also over-committed to be managed within its maintenance budget. Therefore, unless maintenance funding is verified to be available over the long-term, it is not acceptable to identify roads for conversion to trails; the more appropriate options would be storage or decommissioning, depending upon future need.

- I. Public Involvement and NEPA (National Environmental Protection Act) Requirements. Unit scale TAPs are not NEPA decisions; they are analyses intended to inform future projects regarding affordability and cumulative effects. These projects, depending upon the specific impacts, will generally require NEPA decisions prior to implementation. The public will need to be provided opportunities for comment on TAP recommendations near to the time that actual projects are being proposed. This would be expected to include a broad spectrum of participation by citizens, other agencies, and tribal governments as appropriate.
- J. Products. All final products to be posted on an internal website or on the “O” drive available for access by other Forests and the Regional Office. The final product should consist of the following items:
 - 1. A Travel Analysis Report summarizing the process the results of all analyses conducted.
 - 2. A map showing the entire Road System, ML 1-5, and delineating potential unneeded roads.
 - 3. A list of roads that are proposed for transfer to another jurisdiction and whether acceptance by that jurisdiction is likely within the next three years.
 - 4. A tabular summary of issues, benefits and risks for each road in the system. (Although not included in this write-up an example format is available and will be provided to each unit as they begin work on their TAP.)
 - 5. A spreadsheet identifying available maintenance funding and expected costs for applying affordable operational maintenance levels and associated BMPs (best management practices) to the road system to result in a financial strategy that balances funding and costs such that no deferred maintenance will accrue if fully implemented.
 - 6. Signature sheets with dates, indicating preparation and review officials, and Review by the Forest Supervisor.
- K. Schedule and Completion Date.

The chief’s letter directs that all units be covered by a TAP by the end of FY 2015. The proposed schedule is as follows:

FY10 George Washington NF, GW/J NFs
 Talladega Ranger District, NFs in Alabama
 Andrew Pickens RD, FM/S NF
 Davy Crockett Ranger District, NFs in Texas

FY11 Jefferson NF, GW/J NFs - Completes GW/J NFs

Oakmulgee Ranger District, NFs in Alabama
Oconee Ranger District, Chattahoochee-Oconee NFs
Appalach/Wakulla Ranger District, NFs in Florida
Enoree Ranger District, FM/S NF
Croatan NF, NFs in North Carolina

- FY12 Shoal Creek Ranger District, NFs in Alabama
Bankhead RD, NFs in Alabama
Conecuh RD, NFs in Alabama
Tuskegee RD, NFs in Alabama
Conosauga Ranger District, Chattahoochee Oconee NFs
Chattooga River RD, Chattahoochee-Oconee NFs
Blue Ridge RD, Chattahoochee-Oconee NFs – Completes CH-O NFs
Osceola RD, NFs in Florida
Long Cane RD, FM/S NFs
Winn RD, Kisatchie NF
Pisgah NF in NC
Angelina/Sabine Ranger District, NFs in Texas
Sam Houston RD, NFs in Texas
Redbird RD, Daniel Boone NF
Magazine RD, Ozark-St. Francis NFs
- FY13 Stearns RD, Daniel Boone NF
Shoal Creek RD, NFs in Alabama– Completes NFs in AL
Caney and Kisatchie RDs, Kisatchie NF
LBJ/Caddo RD, NFs in TX – Completes NFs in TX
Nantahala NF in NC
Ocala RD, NFs in Florida – Completes NFs in FL
Francis Marion RD, FM/S NFs – Completes FM/S NFs
Big Piney, Pleasant Hill and Boston Mountain RDs, Ozark-St. Francis NFs
Land between the Lakes – Completes LBL RA
- FY14 NFs in Mississippi – Completes NFs in MS
London RD, Daniel Boone NF
Ouachita NF (Districts to be named)
Sylamore and St. Francis RDs, Oz-St. Francis NFs
Lee Creek, Lake Weddington RDs, Ozark St. Francis NFs – Completes Oz-St. Francis NFs
Calcasieu and Catahoula RDs, Kisatchie NF – Completes Kisatchie NF
Uwharrie RD, NFs in NC – Completes NFs in NC
- FY15 El Yunque NF – Completes EYNF
Cumberland RD, Daniel Boone NF – Completes DBNF
Cherokee NF – Completes Cherokee NF
Ouachita NF (Remaining Districts) – Completes Ouachita NF

Appendix H: 6th Level HUCs Watershed Condition Classifications and Priority Watersheds on the Forest (Table G5)

HUC12_Code	HUC12_Name	Watershed Condition Class	Total Watershed Acres	Watershed FS Land Acres	Watershed Non-FS Land Acres
031601040101	Redland Creek-Chuquatonchee Creek	2	20138	3442	16696
031601040102	Goodfood Creek-Chuquatonchee Creek	2	22487	4563	17924
031601040103	Dicks Creek-Chuquatonchee Creek	2	18999	4005	14994
031601040202	Soctahoma Creek-Houlka Creek	2	21205	6776	14429
031601040205	Long Creek-Houlka Creek	2	28200	6104	22096
031601080101	Choctaw Lake-Noxubee River	2	18264	11629	6635
031601080102	Little Noxubee River	1	16566	5584	10982
031601080103	Webster-Mill Creek	1	19045	6326	12719
031601080104	Golden Horn Creek-Noxubee River	1	21397	5433	15964
031601080105	Boughenia Creek-Sand Creek	1	21553	4055	17497
031601080204	Lawson Branch-Jones Creek	2	10817	6093	4724
031700030102	Turkey Creek-Big Creek	2	26560	5511	21049
031700030103	Mill Creek-Big Creek	1	28345	8785	19560
031700030104	Little Creek-Big Creek	1	24004	7784	16220
031700030202	Panther Branch-Griffin Creek	1	13738	6394	7343
031700030301	Hell Hole Creek-Big Creek	2	25223	10415	14808
031700030302	Waterfork Branch-Mason Creek	2	30495	11637	18859
031700040101	Crout Creek-Leaf River	1	23011	6563	16448
031700040102	Mill Branch-Tallabogue Creek	1	18721	4407	14314
031700040103	Tishkill Creek-Leaf River	2	24211	9524	14687
031700040104	Shongelo Creek-Leaf River	2	26172	4367	21805
031700040105	Little Ichusa Creek-Ichusa Creek	2	31681	9397	22284
031700040201	Little Tallahala Creek-West Tallahala Creek	1	28929	15320	13609
031700040202	Quarterliah Creek	1	23428	7866	15562

031700040203	Otak Creek-West Tallahala Creek	2	23047	9532	13515
031700040301	Little Oakohay Creek-Oakohay Creek	2	34808	18834	15974
HUC12_Code	HUC12_Name	Watershed Condition Class	Total Watershed Acres	Watershed FS Land Acres	Watershed Non-FS Land Acres
031700040302	Clear Creek-Oakohay Creek	2	36168	4398	31770
031700050407	Camp Creek-Bogue Homo	1	19816	8669	11146
031700050408	Dry Creek-Bogue Homo	1	17791	1443	16348
031700050501	East Tiger Creek-Tiger Creek	1	20173	14925	5248
031700050502	Tiger Creek-Bogue Homo	2	22009	10910	11099
031700050603	Garraway Creek-Leaf River	2	23792	9586	14206
031700050604	Gum Branch-Leaf River	1	30596	7546	23050
031700050701	Bear Creek-Little Thompson Creek	2	24238	2977	21261
031700050702	Bull Branch-Thompson Creek	1	26422	2513	23909
031700050703	Hollis Creek-Thompson Creek	2	32986	26286	6700
031700050704	West Little Thompson Creek-Thompson Creek	2	33511	12160	21351
031700050801	Piney Woods Creek	1	35596	19054	16542
031700050802	Sand Hill Creek	2	19507	2601	16906
031700050902	Little Creek-Leaf River	2	36063	11017	25046
031700050903	Big Oktibee Creek-Leaf River	2	26731	5110	21621
031700050904	McMillan Creek-Leaf River	1	22309	5652	16657
031700060101	Whiskey Creek	2	28188	26004	2184
031700060102	Whiskey Creek-Pascagoula River	2	30967	3295	27672
031700060201	Wolf Branch-Bluff Creek	2	18843	4845	13998
031700070107	Potato Creek-Big Creek	1	19970	3433	16537
031700070108	Granny Creek-Black Creek	2	14492	5086	9406
031700070201	Walls Creek	2	17384	3452	13932
031700070202	Poplar Creek-Chaney Creek	2	23454	12969	10485
031700070203	Pearces Creek	2	16672	13534	3138
031700070204	Bowens Bay Creek-Beaverdam Creek	1	16375	5370	11004
031700070205	Browns Creek-Beaverdam Creek	2	25472	15236	10237

031700070206	Middle Creek-Black Creek	2	33548	22775	10773
031700070302	Hickory Creek-Red Creek	2	31476	4016	27460
031700070303	Double Branch	2	20720	7861	12859
031700070304	Hurricane Creek-Red Creek	1	30157	4866	25291
031700070306	Chaney Creek-Red Creek	1	25257	2571	22686
031700070401	Old Creek-Red Creek	2	22091	3607	18484
031700070402	Cypress Creek-Red Creek	2	18055	11259	6796
HUC12_Code	HUC12_Name	Watershed Condition Class	Total Watershed Acres	Watershed FS Land Acres	Watershed Non-FS Land Acres
031700070403	Clear Creek-Bluff Creek	2	23262	9937	13325
031700070404	Cooper Hill Creek-Red Creek	2	25116	7773	17343
031700070405	Little Red Creek	1	17931	5813	12118
031700070501	Joes Creek-Cypress Creek	2	33793	27989	5805
031700070502	Beaver Creek-Hickory Creek	1	19263	15227	4037
031700070503	Cypress Creek-Black Creek	2	35487	21646	13840
031700070504	Little Sweetwater Creek-Sweetwater Creek	1	13459	3070	10389
031700070505	Long Branch-Black Creek	1	19545	1658	17887
031700090401	Hurricane Creek-Railroad Creek	2	27411	21894	5517
031700090402	Bayou Costapia	1	18949	1309	17640
031700090403	Bayou Billie-Tchoutacabouffa River	2	24745	17432	7313
031700090404	Bigfoot Creek-Tuxachanie Creek	2	24552	10874	13677
031700090405	Hester Creek-Tuxachanie Creek	2	24859	17555	7304
031700090406	Hog Branch-Tuxachanie Creek	2	11051	3844	7207
031700090501	Horse Creek-Biloxi River	1	37701	9322	28378
031700090503	Saucier Creek	1	25916	6661	19255
031700090506	Palmer Creek-Biloxi River	1	23807	7998	15809
031800010904	Hontokalo Creek	2	37713	5480	32233
031800010905	Tallabogue Creek	1	33759	3806	29953
031800011001	Shockaloo Creek	1	38472	11143	27329
031800011002	Balucta Creek	2	33987	6597	27389
031800011103	Upper Tibby Creek	1	16136	1342	14795
031800020101	Sugar Bogue-Coffee Bogue	1	24184	15784	8400
031800020102	Beach Creek-Coffee Bogue	1	15037	5404	9633

031800020103	Lee Branch-Coffee Bogue	1	15819	1109	14710
031800020301	Upper Pelahatchie Creek	1	12206	1010	11196
031800020701	Robinson Creek	1	12926	2815	10110
031800020702	Upper Strong River	1	25140	3898	21242
031800020703	Barber Creek-Caney Creek	2	22530	12467	10064
031800020704	Davis Creek-Strong River	2	31320	13939	17382
031800020707	White Oak Creek	2	12836	2839	9997
031800020708	Jump Creek-Strong River	2	17215	3185	14031
080102070601	Bell Creek-West Prong Muddy Creek	2	19278	1632	17646
HUC12_Code	HUC12_Name	Watershed Condition Class	Total Watershed Acres	Watershed FS Land Acres	Watershed Non-FS Land Acres
080102070603	North Branch Hurricane Creek-Hurricane Creek	2	12719	2469	10250
080102100201	Goose Creek-Wolf River	2	13383	4238	9145
080102100202	Grogg Creek-Wolf River	2	31567	8066	23501
080302010502	North Tippah Creek-Tippah River	2	35527	2315	33211
080302010503	Caney Creek-Shelby Creek	2	12172	4390	7782
080302010504	Campbell Creek-Yellow Rabbit Creek	2	10367	3822	6545
080302010505	Rhoden Creek-Tippah River	2	28274	6239	22035
080302010601	Little Snow Creek-Snow Creek	2	30816	8934	21882
080302010602	Oaklimeter Creek	2	30470	9770	20700
080302010603	Chewalla Creek	2	28233	12485	15747
080302010604	Chilli Creek-Tippah River	2	29641	10739	18903
080302010605	Potts Creek-Tippah River	2	22711	5065	17646
080302010701	Cane Creek-Lockes Creek	2	20501	1990	18511
080302010702	Mitchell Creek-Little Tallahatchie River	2	24211	2663	21548
080302010703	East Cypress Creek-Cypress Creek	2	18167	9778	8388
080302010704	Puskus Creek-Cypress Creek	2	19375	7429	11946
080302010705	Cornersville Creek-Mill Creek	2	16937	3760	13178
080302010706	Fice Creek-Little Tallahatchie River	2	15497	826	14671
080302010707	Bagley Creek-Little Tallahatchie River	2	33371	9390	23981
080302010801	Upper Big Spring Creek	2	25036	1847	23188
080302010802	Lower Big Spring Creek	2	11225	1773	9452

080302010804	Graham Mill Creek	2	20667	1676	18991
080302010806	Turner Creek-Little Tallahatchie River	1	28145	1535	26610
080302020301	Simmons Creek	2	17495	2674	14821
080302020303	Upper Tillatoba Creek	2	26480	2272	24208
080302030103	Kettle Creek-Yocona River	2	28825	4394	24431
080302030105	Yellow Leaf Creek	2	19873	2757	17115
080302030106	Pumpkin Creek-Yocona River	2	19432	2257	17175
080302030305	Long Branch-Yocona River	2	25360	2363	22997
080302050308	Cypress Creek-Turkey Creek	2	26148	4052	22096
HUC12_Code	HUC12_Name	Watershed Condition Class	Total Watershed Acres	Watershed FS Land Acres	Watershed Non-FS Land Acres
080302050309	Organ Creek-Perry Creek	2	20900	8261	12639
080302071700	Unnamed	2	168728	19769	148959
080302071900	Unnamed	2	144039	40320	103719
080602030701	Brandywine Creek	2	18038	4519	13519
080602050104	Beaver Run Branch-McCall Creek	2	21940	3156	18784
080602050202	Goober Creek-McGehee Creek	2	16291	1174	15117
080602050203	Horse Creek-McGehee Creek	2	17319	5713	11606
080602050301	Sweetwater Creek-Homochitto River	2	30120	4239	25881
080602050302	Hurricane Creek-Homochitto River	2	29946	5506	24440
080602050303	Horse Creek-Homochitto River	2	18027	6323	11704
080602050304	Cool Springs Branch-Homochitto River	2	15741	4440	11302
080602050305	Molls Creek-Homochitto River	2	25063	10601	14462
080602050306	Wolvington-Porter Creek	2	10178	5649	4529
080602050307	North Dry Creek-Homochitto River	2	29687	6834	22854
080602050403	Owen Creek-Morgan Fork	2	33276	3509	29767
080602050404	Tom Branch-Middle Fork Homochitto River	2	16889	2391	14498
080602050501	Middleton Creek	2	17905	13611	4294
080602050502	Caston Creek	2	10976	7042	3933
080602050503	Tallys Creek-Homochitto River	2	20431	9350	11082

080602050504	Birdman Branch-Brushy Creek	2	25682	18071	7611
080602050505	Richardson Creek	2	10770	8639	2131
080602050506	Tar Creek-Foster Creek	3	22317	8104	14214
080602050507	Zeigler Creek-Homochitto River	2	19591	9398	10193
080602050601	Rocky Branch-Dry Creek	2	11531	8280	3251
080602050602	Dry Creek-Homochitto River	3	15035	6979	8056
080602050604	Caney Branch-Dry Bayou	2	12386	2325	10061
080602050605	Tony Creek-Wells Creek	2	14779	6738	8041
080602050607	Turkey Creek-Sandy Creek	2	14723	3992	10731
HUC12_Code	HUC12_Name	Watershed Condition Class	Total Watershed Acres	Watershed FS Land Acres	Watershed Non-FS Land Acres
080602050608	Beaver Branch-Homochitto River	3	26019	14598	11421
080602050701	Duval Creek-Crooked Creek	3	13835	7638	6197

* Priority Watershed Highlighted

Appendix I: Watershed Action Plan

**USDA Forest Service Watershed Condition Framework
FY2011 TRANSITION WATERSHED RESTORATION ACTION PLAN
De Soto Ranger District, De Soto National Forest
National Forests in Mississippi**

1. Summary

a. Watershed Name and HUC:

Middle Creek – Black Creek Watershed HUC 031700070206

b. General Location:

The Middle Creek – Black Creek watershed in De Soto Ranger District is located approximately 15 miles southeast of Hattiesburg, Mississippi and approximately 45 miles north of Biloxi & Gulfport, Mississippi.

c. Total Watershed Area: 33,548.5 acres NFS area within watershed: 68%.

d. Watershed Characterization:

• **General Physiography:**

The Middle Creek – Black Creek (MC-BC) watershed is located in southern Mississippi on the Gulf Coastal Plain of the US in the historic range of the longleaf pine ecosystem. Historically, uplands in the area were dominated by longleaf pine and diverse herbaceous groundcover. Some longleaf pine communities are still present, and longleaf pine ecosystem restoration is ongoing in the area. The fire maintained longleaf uplands transition to hardwood-dominated floodplain forests with components of loblolly or slash pine in riparian areas. Often a slope forest community or wetland flat occupies the transition zone between the uplands and hardwood bottoms and floodplains. Unique habitats like gum ponds, pitcher plant bogs, sandhills, shortleaf pine ridges, and mesic slope forest are also found on the

landscape.

- **Land Use:**

The immediate ownership pattern of De Soto Ranger District is a continuous block of National Forest System lands surrounded by privately owned and state land with private, federal, and state in-holdings. Farm lands, pine plantations, large chicken houses, homes, and house trailers are common sites on adjacent private land in rural areas. Suburban expansion is more common on the south end of the District near Biloxi and Gulfport, but developments are growing in abundance throughout the headwaters of Black Creek on the northwest side of the District.

Middle Creek and Clear Creek are tributaries of Black Creek located in the northern portion of the MC-BC watershed. These two creeks drain a portion of the special use permit lands utilized by Camp Shelby Joint Forces Training Center. Approximately 117,000 acres of National Forest Lands are under special use permit for the Mississippi National Guard as part of Camp Shelby. There are also 17,000 acres of Department of Defense and State of Mississippi lands within and adjacent to this permit area. The Camp Shelby permit area contains thousands of ranges, targets, firing points, bivouac areas, towers, communication sites, and other resources. The Department of Defense (DoD) continues to seek opportunities to implement their Army Compatibility Use Buffer (ACUB) program. This program allows the DoD to buy properties or easements near high use military areas to ensure adjacent land uses remain compatible with military training needs. With the assistance of the Nature Conservancy, these acquired tracts of land are placed in the possession of natural resources based agencies with ecosystem restoration and land management objectives. Some properties within and near the MC-BC watershed are being reviewed for potential purchase as part of the ACUB program.

There are several other well-managed areas across the landscape. The nearly 20,000 acre Mississippi Sandhill Crane Wildlife Refuge is located 3 miles southeast of the District. Several thousand acres of Nature Conservancy holdings are scattered throughout south Mississippi. The 150,000 acre Chickasawhay Ranger District lies approximately 25 miles to the north of De Soto Ranger District. Many scattered state owned 16th section lands are managed for timber production in the area. An all-lands approach brings landowners and stakeholders together across boundaries to decide on common goals for a shared landscape utilizing Cooperative Weed Management Areas, coordinating prescribed burning, and encouraging reforestation.

The De Soto Ranger District and nearby managed green areas are refugia for plants and animals and are easily discernable when viewing images taken from outer space because they contrast with the abundance of human developments across the surface of the Earth in south Mississippi. Current management direction for De Soto Ranger District is ecosystem restoration. The entire District is covered by NEPA documentation for longleaf pine ecosystem restoration and maintenance.

- **General Overview of Concerns:**

The MC-BC watershed is classified as a watershed functioning at risk. Major threats

to the system include pollution from household and industrial garbage dumping, untreated sewerage run-off, increased sedimentation from roads/development, and non-native invasive species (e.g. cogongrass and feral hogs). Public outreach, increased vigilance, and coordination with the Mississippi Department of Environmental Quality (MS DEQ) are proposed for reducing dumping and sewerage run-off. Road decommissioning coupled with restoration of native vegetation will be implemented to reduce sedimentation on federal lands. A feral hog trapping program has been initiated in the northern portion of the watershed on Camp Shelby, and an aggressive treatment program for non-native invasive plant species is ongoing in the watershed.

Some areas in the MC-BC watershed that were historically hardwood dominated forest have been planted with pine trees. These areas lack the functional integrity of riparian forest and have the potential to be restored. Some upland areas in the watershed historically dominated by longleaf pine were planted with off-site pine species such as loblolly pine. The longleaf pine ecosystem can be restored in these areas. Also, thinning is needed for existing pine stands to reduce the risk of catastrophic wildfire, improve threatened and endangered species habitat, and preempt potential southern pine beetle infestation.

- **Important Ecological Values:**

The portion of Black Creek running through the MC-BC watershed is designated as Mississippi's only Wild & Scenic River. The MC-BC watershed also contains the 5,000 acre Black Creek Wilderness Area. Maintenance and enhancement of the watershed is necessary to protect these two nationally recognized natural areas and to enhance all other values contained in the watershed.

Populations of the federally threatened gopher tortoise and black pine snake (a candidate for federal listing) are found in upland areas of the MC-BC watershed. The watershed also harbors populations of the federally endangered Louisiana quillwort, a primitive plant that grows in and along small creeks and washes.

On a regional scale, the MC-BC watershed is part of the larger Pascagoula River watershed. Black Creek is a major tributary of the Pascagoula River Basin, the largest unobstructed, naturally flooding river system entering the Gulf of Mexico from the United States. Maintaining and enhancing the health of the MC-BC watershed has a direct positive effect on the larger natural system. Also, habitat for Forest Service sensitive aquatic animal species is found in Black Creek, and the federally threatened Gulf Sturgeon utilizes designated critical habitat in the Pascagoula River as part of its reproductive cycle.

- **Current Condition Class:** 2 – Functioning at Risk
- **Target Condition Class:** 1 – Functioning Properly

e. Key Watershed Issues

- 1) Attributes/Indicators within FS control to affect

ATTRIBUTES /INDICATOR	REASON FOR RATING
5.1 Riparian Vegetation Condition	Restore bottomland hardwood riparian and transitional ecosystems.
6.1 Open Road Density	No new roads will be created for ecosystem restoration or other activities. More roads are planned for
6.2 Road Maint.	Refinement of road maintenance techniques to reduce sedimentation. Proper placement of appropriate crossing
8.1 Fire Condition Class	Continue emphasis on prescribed burning of fire dependant ecosystems in uplands and pitcher plant wetlands.
8.2 Wildfire Effects	Restore fire-resistant and dependent longleaf pine ecosystem, thin small diameter stands, prescribe burn
11.1 Terrestrial Invasive Species of Extent and Rate of Spread	Continue aggressive treatment of cogongrass and other non-native invasive plants. Assist in identification of areas in need of feral hog eradication and contact State Trappers.
12.1 Forest Health Insects and Disease	Thin small diameter trees in uplands. Remove off-site pines and restore longleaf pine ecosystem in uplands.

2) Attributes/Indicators that require other parties to address

ATTRIBUTES /INDICATOR	REASON FOR RATING
1.2 Water Quality Problems	Traces of fecal coliform and Ecoli content detected during past water quality testing in the area. MS DEQ, EPA, County Leaders = outreach, education, and regulation.
2.1 Water Quantity, Flow Characteristics	Development and urbanization in the headwaters of Black Creek many miles away is contributing to higher flow rates in the watershed. USGS stream gages + County, City, and State leaders, planners and developers (green
3.1 Aquatic Habitat Fragmentation	Several inappropriate placements or improper construction of water crossings for roadways. County and State
9.1 Loss of Forest Cover	Loss of nearby forested lands due to development. County Forestry Associations, County Leaders, TNC, ACUB program = education, outreach, or land purchase.
11.1 Terrestrial Invasive Species	Extant and rate of spread of plant and animal NNIS. A host of partners help with the plants. We need continued support. Camp Shelby Joint Forces Training Center is implementing a feral hog control program.

2. Watershed Characteristics and Conditions

a. General Context/Overview of the Watershed

The MC-BC watershed lies within the Pascagoula River Basin in the East Gulf Coastal Plains of the Pine Hills Physiographic Region. Black Creek is a major sub-basin in this region. The watershed lies within Forrest and Perry counties in south Mississippi and meanders in a south and easterly direction making its way toward the Pascagoula River, the largest unimpeded river in the lower 48 states.

The topography of the area is gently rolling to hilly with rounded uplands and flatter areas adjacent or immediately within most drainage areas. Elevations range from approximately 275 feet on ridges to 150 feet mean sea level within the Black Creek corridor.

The geology of the area consists of alluvium, coastal deposits dating back to the Holocene, Pleistocene (Citronelle or Upland Complex Formation), and Miocene (Pascagoula and Hattiesburg Formations). Soils in the watershed are typically light-colored; comprised of sand, sandy loam, and clay textures, with low organic matter content. Hattiesburg and Citronelle clay formations comprise most of the bedrock. The Hattiesburg formation is one of the principal aquifers used for domestic water supply in the area.

The surface and near-surface geologic formations consist of the Hattiesburg Formation and the overlying Upland Complex, also called the Citronelle Formation. Typically, the Upland Complex occurs on hilltops or higher elevations, whereas the Hattiesburg Formation occurs in lower areas. The Hattiesburg Formation is overlain by relatively thin beds of Holocene or Pleistocene alluvium. Textural differences in the formations affect their hydrologic properties. The Hattiesburg Formation is predominantly sandy, clayey, silt. The Upland Complex consists of sand, gravels, and sandy gravels. The Hattiesburg Formation is fine grained, more impermeable, and retains moisture. The Upland Complex is coarse-grained and more permeable. In general, wetlands are associated with the Hattiesburg formation and drier gopher tortoise habitat is associated with the Upland Complex.

The common occurrence of wetlands along stream valleys is due to the impermeable nature of the Hattiesburg Formation. The upper reaches of most streams in the watershed occur near the contact between the Hattiesburg Formation and the Upland Complex. This relationship means that groundwater within the Upland Complex emerges at and along the upper reaches of streams and provides base flow. In some cases, there is a constant supply of moisture to an intergraded area via seeps and springs. Spring fed streams, slope wetlands, or bogs may form due to stratigraphic relationships, deposits of impermeable clayey inter-beds, or weathering-induced hardpans.

Climate of the watershed is heavily influenced by weather systems in the Gulf of Mexico and is characterized by persistent humidity with relatively mild temperatures. Winters are short and mild. Summers are long and hot. Temperature couples with humidity in the peak summer months to create dangerous heat indices. Annual temperature averaged across all seasons, night, and day is 70 degrees F. Winter weather patterns are usually characterized by fronts moving from east to west, bringing north or northwesterly winds. Tropical storms and hurricanes are persistent threats during warmer months. Annual precipitation is approximately 60 inches, though rainfall amounts have failed to reach this average in any of the past 6 years. October is usually the driest month, and March is usually the wettest.

Based on current projections, the primary regional-level effects of climate change in the Southeast are expected to include: 1) warmer temperatures and a rising heat index, 2) moisture changes, 3) rising sea level and coastal erosion, and 4) increased extreme

disturbance events (such as an increase in frequency and intensity of hurricanes and tornadoes occurring at greater than historical variability). Considering uplands on National Forest Lands in the watershed, longleaf pine ecosystems are naturally resilient to climate extremes. Longleaf pine grows under very dry and very wet conditions, is tolerant of and dependent on frequent fire, is better able to weather severe storms, and is more resistant to beetle infestations likely to be exacerbated by warmer and drier conditions. Longleaf ecosystems also seem to be well suited for long-term storage of carbon. In addition, longleaf pine trees live longer than other southern pine species and produce wood more likely to be used in long-lasting structures.

Fishing in the BC-MC watershed is regulated by the Mississippi Department of Wildlife, Fisheries, and Parks. Bass, brim, and catfish are common sport fish in Black Creek. Mollusks, darters, pickerel, and gar are found throughout the watershed. The leaf packs and debris dams common throughout streams in the watershed are home to a diverse collection of invertebrates.

b. Watershed Conditions

The condition of the watershed varies with perspective. In general, the watershed area located on National Forest Land functions with more ecological integrity than on private holdings. Some uplands and hill slopes in the watershed are well maintained longleaf pine ecosystems with large populations of gopher tortoise and a diverse herbaceous understory. Other areas are in need of thinning and represent potential habitat for gopher tortoise and other piney woods critters. Still other forested uplands are in need of complete longleaf pine ecosystem restoration. On private land, many uplands have been cleared and converted to home sites, small farms, loblolly pine plantations, and road corridors.

Black Creek traverses a variety of substrate types and associated habitats in the watershed. Some sloughs and oxbow ponds are found on the edges of Black Creek, and several longleaf pine ridges roll up to and serve as steep banks for Black Creek. Even the smaller streams in the MC-BC watershed such as Clear Creek and Mill Creek have channels bordered by a myriad of habitat types. This means that riparian habitat is at times confined to hummocky shoulders and sloped banks. In other cases, wide expanses of riparian areas and floodplains run along creek channels well beyond the shoulders of the bank. This array of channel morphology lends to varied erosion rates depending on substrate, vegetation, relative flow rate, run off, and direction or angle of flow during high volume events.

Habitat conditions within the channels of streams seem to be stable. Water quality monitoring in the last several years indicates occasional spikes in level of fecal content and Ecoli in parts of Black Creek. Although these levels appear to be under control, further monitoring will be reviewed closely. Monitoring of turbidity, litter, and other water quality parameters will be used to further assess in-channel habitat as part of integrated restoration measures.

3. Restoration Goals, Objectives, and Opportunities

a. Goal Identification and Desired Condition

The primary watershed restoration and management goals are to maintain natural functions in the watershed and improve natural functions for those aspects of the watershed that are impaired. A primary watershed restoration mission goal is to accomplish management of the watershed through collaboration with partners. Another mission goal is to strengthen the relationship with the public via positive economic impact, long-term improvements to water quality, and improved recreational experiences.

The desired condition is a watershed containing terrestrial, riparian, and aquatic ecosystems that capture, store, and release water, sediment, wood, and nutrients within their range of natural variability for these processes. The desired condition also calls for a watershed that creates and sustains functional terrestrial, riparian, aquatic, and wetland habitats that are capable of supporting diverse populations of native aquatic, wetland, and riparian habitat dependent species as well as diverse populations of native upland plant and animal species, including threatened, endangered, and Forest sensitive species.

Recreational and cultural values of the MC-BC watershed will be maintained and enhanced as part of the desired condition. The Black Creek Hiking Trail traverses the entire length of the watershed along Black Creek. Camping, hunting, canoeing, kayaking, and hiking are popular activities in the watershed. . Additionally, the watershed contains many pre-historic and historic heritage sites. Many of these sites are found near natural springs that supply fresh water to tributaries of Black Creek. Protection of these sites also protects clean water supply to the watershed.

Availability of restoration tools were taken into consideration when selecting the MC-BC watershed as a priority watershed for integrated restoration. De Soto Ranger District is covered under landscape level NEPA decisions to support watershed management goals. These decisions cover longleaf pine ecosystem re-establishment, pine thinning, prescribed burning, fuel reduction and wildlife habitat improvement with herbicide, non-native invasive species control with herbicide, southern pine beetle suppression, pitcher plant bog restoration, and road decommissioning. An environmental assessment that includes bottomland hardwood forest ecosystem restoration in the Black Creek watershed is underway with tremendous support from collaborators.

b. Objectives

i. Alignment with National, Regional, or Forest Priorities.

The USDA Forest Service Strategic Plan for FY2010 – FY2015 targets the restoration of watershed and forest health as a core management objective of the National Forests and Grasslands. To achieve this goal, the Forest Service is directed to restore degraded watersheds by strategically focusing investments in watershed improvement projects and conservation practices at the landscape and watershed scales. The watershed condition goal of the Forest Service is “to protect National Forest System watersheds by implementing practices designed to maintain or improve watershed condition” (FSM 2520.2). The WCF provides a means to achieve this goal.

Direction from the Southern Region Strategic Framework and the National Forests in Mississippi Forest Leadership Team emphasizes ecosystem management, ecosystem

restoration, protection and improvement of habitat for all federally listed species, prevention of non-native invasive species spread, reduction of hazardous fuels, and promotion of healthy Forests by reducing the threat of destructive insects and disease. Regional Office and National Forests in Mississippi Forest direction call for collaboratively working across boundaries with other agencies, organizations, and groups to promote the “all hands, all lands” vision of the Secretary of Agriculture. Developing vision and strategy for public recreation program delivery with stakeholder involvement is also a priority. The watershed restoration plan is in line with all of these priorities.

ii. Alignment with State or local goals.

The Mississippi Department of Environmental Quality monitors and protects the waters of the state. MS DEQ states part of its mission in this way: “To conserve and improve State waters, for man’s use and the sustainment and propagation of wildlife and aquatic life, through focused research, responsible regulation, widespread education, and cooperation with other agencies and the public.” Mississippi Soil and Water Conservation Districts, the Mississippi Forestry Commission, and the Mississippi Department of Wildlife, Fisheries, and Parks support land, water, and wildlife conservation across the state. The restoration and maintenance plans proposed for the MC-BC watershed mesh with the goals of these state agencies.

c. Opportunities

i. Partnership Involvement.

The De Soto Ranger District and the Mississippi Army National Guard have a long history of working together to ensure protection of National Forest Land utilized under special use permit for training troops. Collaboration between agencies has provided valuable data on federally threatened and endangered species as well as Forest Service sensitive species on the De Soto Ranger District. The Nature Conservancy Camp Shelby Conservation Program provides rare species and habitat monitoring services for the Mississippi Army National Guard on Forest Service, Department of Defense and state of Mississippi lands included within the Camp Shelby Joint Forces Training Center boundaries.

The Nature Conservancy monitoring focuses on the following species and their habitat: Louisiana quillwort (federally listed as endangered), gopher tortoise (federally listed as threatened), black pine snake (candidate for federal listing), Camp Shelby burrowing crayfish (monitoring required as part of US Fish and Wildlife Service agreement to remove from candidate status), and cogongrass and kudzu (invasive species). This monitoring is funded by the Department of Defense National Guard Bureau.

Examples of monitoring include: training areas surveyed annually to enforce protection measures for the federally threatened gopher tortoise and streams on the training sites monitored annually for potential effects to the endangered Louisiana quillwort plant. Consequently, some of our best data for threatened and endangered species on the De Soto Ranger District is a product of this relationship. Monthly

meetings and annual monitoring reports allow the Forest Service and the Mississippi Army National Guard to make the best management decisions for species of concern and their habitat within the Camp Shelby special use permit area.

Other state agencies will also continue to play an active management role in the watershed. The Mississippi Department of Environmental Quality monitors water quality at fixed and random sites in the MC-BC watershed. Coordination with MS DEQ will allow water quality to be reviewed and addressed where appropriate by the Forest Service and other stakeholders in the watershed. Mississippi Department of Transportation, Mississippi Power Company, and local counties are expected to continue their treatment of non-native invasive plants along road and powerline rights-of-way within and adjacent to the MC-BC watershed. De Soto Ranger District partners with several state and local groups including Mississippi Soil and Water Conservation Districts to provide outreach for private land owners through educational workshops.

The United States Geological Service (USGS) monitors water depth, temperature, flow rates, and other parameters at several gages in the Black Creek watershed. These real time and historic data are being provided to De Soto Ranger District from the USGS hydrologic data team. The USGS has also agreed to place more stream flow gages in the MC-BC watershed in locations both agencies agree upon.

De Soto Ranger District held collaborative meetings in 2007 and 2010 for the Ecosystem Restoration for Gopher Tortoise and Red-cockaded Woodpecker Habitat (HFRA) project. Input for prioritization of treatment areas was given during the collaborative meetings from the following groups: USDI Fish and Wildlife Service, National Wild Turkey Federation, Wildlaw, Mississippi Department of Wildlife, Fisheries, and Parks, Mississippi Museum of Natural Science, University of Southern Mississippi, The Nature Conservancy, Mississippi Army National Guard, and several individual members of the public.

Representatives of interested groups volunteered to do follow up reviews of work proposed in the collaborative project once work was underway. Credibility with researchers and government agencies has increased because of project review and input from collaborators. The collaborative group helped the De Soto Ranger District prioritize treatment areas for ecosystem restoration activities. Some of these priority treatment areas are included in the MC-BC watershed.

ii. Outcomes/Output

a) Performance Measure Accomplishment.

Performance measures will be a combination of numeric and descriptive information. Quantitative attributes will include road density changes or miles of road decommissioned, acres treated and monitored for NNIS, acres of restored ecosystems, acres of wildlife and T&E habitat improvement, acres of hazardous fuel reduction, water quality and flow measurements, etc. Qualitative variables and descriptors will be used to interpret watershed health accomplishments when numeric indicators or thresholds are lacking or where quantitative data is either

unavailable or too expensive to obtain for the entire watershed.

b) Socioeconomic Considerations:

Positive economic impacts will result from sustained operation of Camp Shelby Joint Forces Training Center (one of the area's largest employers and revenue contributors), local contracts for removal of forest products during ecosystem restoration activities, and herbicide application contracts for fuel reduction and treatment of non-native invasive species. Also, recreational value translates into economic value for two outfitters that sell and rent canoes, kayaks, and outdoor gear utilized in the watershed.

Nearly all jobs created will be of a technical nature and small businesses would be highly favored for contracts awarded. These jobs will require skills in tree harvesting and transport, tree and herbaceous understory planting, heavy machinery operation, hand tool operation, timber sale layout, timber cruising, and herbicide application. Newly created jobs within neighboring communities resulting from this proposal will likely stimulate an otherwise depressed local economy.

Local communities will also benefit from an increase in funds contributed to the 25% payments to states. These payments are associated with the Secure Rural Schools and Community Self-Determination Act of 2000 and provide much needed funding to counties for the benefit of public schools, roads, and other purposes.

There are several entities within the general vicinity of the De Soto National Forest who utilize small diameter material and other woody biomass which include Mississippi Power Company, Piney Wood Pellets, and Intrinergy (Coastal Paper Plant). Ecosystem restoration and thinning will contribute to a more dependable and steady flow of woody biomass to help create sustained local markets, as well as a more consistent valuation of products delivered.

d. Specific Project Activities – Essential Projects:

a. NNIS Control (Cogongrass and Feral Hogs)

- Attribute/ Indicator Addressed: 6.2 – Road Maintenance and 11.1 – Extent and Rate of Spread
- Project Description: This project is being implemented to control and reduce noxious weed and nuisance wildlife infestations.
- Partners Involvement: Camp Shelby, The Nature Conservancy, MS Department of Wildlife, Fisheries, and Parks, MS Department of Transportation
- Timeline: Starting in 10/01/11 and continuing for 3 years
- Estimated costs and associated Budget Line Item

b. TES Habitat Improvement (Gopher Tortoise and RCW)

- Attribute/ Indicator Addressed : 2.1 – Flow Characteristics, 6.1 – Open Road Density, 8.1 – Fire Condition Class, and 12.1 – Insects and Disease
- Project Description: This project contributes to the restoration of habitats that benefit multiple species of the longleaf ecosystem.
- Partners Involvement:
- Timeline: Starting in 10/01/2011 and continuing for 4 years Estimated costs and associated Budget Line Item

c. Bottomland Hardwood Ecosystem Restoration

- Attribute/ Indicator Addressed : 5.1 Riparian Vegetation
- Project Description: This project restores the hardwood component of slope and bottomland forest.
- Partners Involvement:
- Timeline: Starting in 10/01/2012 and continuing for 3 years Estimated costs and associated Budget Line Item

d. Prescribed Burning

- Attribute/ Indicator Addressed: 8.1 Fire Condition Class, 8.2 Wildfire Effects, 12.1 Forest Health
- Project Description: This project reduces hazardous fuel loading and maintains/restores longleaf pine ecosystem, including T&E habitat.
- Partners Involvement: MS Army National Guard, DoD, The Nature Conservancy Timeline: Starting in 10/11/11 and continuing for 4 years
- Estimated costs and associated Budget Line Item

e. Costs:

	Planning	Design	Implementation	Project Monitoring
FS Contribution	-	\$32,000	\$1,038,720	\$12, 630
Partner Contribution (both in kind and \$)	-	-	\$69,200	-
Total	\$0	\$32,000	\$1,107,920	\$12, 630

f. Timelines and Project Scheduling

FY	Task	FS Cost	Partner cost
12	Treat approx. 50 acres of cogongrass with herbicide.	\$43,750	\$20,000
12	Trap feral hogs on approx. 10 acres	\$30,000	\$2,400
12	Timber sale preparation on approx. 600 acres	\$106,500	-

12	Prescribe burn approx. 1,500 acres	\$30,000	-
12	Midstory removal and hazardous fuels reduction with herbicide on approx. 300 acres	\$36,000	-
12	Restore and enhance stream habitat along 13 miles of Black Creek (garbage and hazardous material removal)	\$3,000	\$750
13	Treat approx. 50 acres of cogongrass with herbicide.	\$43,750	\$20,000
13	Trap feral hogs on approx. 10 acres	\$30,000	\$2,400
13	Timber sale preparation on approx. 750 acres	\$133,125	-
13	Prescribe burn approx. 2,000 acres	\$40,000	-
13	Administer timber sales on approx. 600 acres	\$12,000	-
13	Decommission approx. 5 miles of temporary and unclassified roads	\$7,790	-
13	Restore and enhance stream habitat along 13 miles of Black Creek (garbage and hazardous material removal)	\$3,000	\$750
14	Treat approx. 50 acres of cogongrass with herbicide.	\$45,000	\$20,000
14	Trap feral hogs on approx. 10 acres	\$30,000	\$2,400
14	Timber sale preparation on approx. 750 acres	\$133,125	-
14	Prescribe burn approx. 2,000 acres	\$40,000	-
14	Administer timber sales on approx. 750 acres	\$15,000	-
14	Decommission approx. 3 miles of temporary and unclassified roads	\$5,000	-
14	Restore and enhance stream habitat along 13 miles of Black Creek (garbage and hazardous material removal)	\$3,000	\$750
14	Re-establish longleaf pine on approx. 80 acres	\$51,584	-
15	Administer timber sales on approx. 750 acres	\$15,000	-
15	Decommission approx. 3 miles of temporary and unclassified roads	\$5,000	-
15	Restore and enhance stream habitat along 13 miles of Black Creek (garbage and hazardous material removal)	\$3,000	\$750
15	Re-establish longleaf pine on approx. 120 acres	\$77,376	-
16	Re-establish longleaf pine on approx. 150 acres	\$96,720	-

g. Other Partners

In addition to Camp Shelby, The Nature Conservancy, USGS, and MS DEQ, other collaborative partners for implementation of integrated restoration in the MC-BC watershed will include Black Creek Canoe Rental, University of Southern Mississippi, Mississippi State University, Mississippi Department of Wildlife, Fisheries, and Parks, Mississippi Department of Transportation, Mississippi Power Company, Forrest and Perry Counties, US Fish and Wildlife Service, Land Trust for Southern Mississippi, Pinebelt Pathways Black Creek Blueway/Greenway Trail Project, Mississippi Soil & Water Conservation Districts, and USDA Natural Resource Conservation Service.

4. Restoration Project Monitoring and Evaluation

a. The Forest will monitor:

- Non-native invasive plant species eradication
- Hazardous fuel reduction and fire condition class changes
Longleaf pine restoration
- Hardwood forest restoration
- Threatened and endangered species populations
Southern Pine Beetle (FS Forest Health)
- Channel parameters –bank erosion, invasive species, fisheries

b. Monitoring will be done in cooperation with:

- The Nature Conservancy – gopher tortoise, black pine snake, Louisiana quillwort, NNIS
- Mississippi Army National Guard/Camp Shelby Joint Forces Training Center – gopher tortoise, NNIS
- USDI Fish and Wildlife Service – Gopher tortoise and Louisiana quillwort management guidance
- MS DEQ/EPA – Water quality and quantity parameters
- USGS – Water quantity parameters, National Water Information System (NWIS)
Black Creek Canoe Rental – Litter, large woody debris accumulation, descriptive flow characteristics

Action Plan Date: 9/29/11

Reviewing Official & Title: Lynn D. Corbett

Forest Contact Information: (601) 965-1611

Appendix J: Likely Not Needed Roads for Future Use by Watershed Classification (Table G6)

Road Number	BMP-mi	EMP-mi	Mileage	Watershed Classification
101M	0.00	0.10	0.10	2
101N	0.00	0.24	0.24	2
103E	2.80	3.50	0.70	2
106G	0.00	0.10	0.10	2
111G1	0.00	0.40	0.40	2
120	0.00	0.50	0.50	3
122L	0.70	0.94	0.24	2
126B	2.62	4.05	1.43	3
153	5.00	5.63	0.63	2
153A7	0.00	0.57	0.57	2
170	0.70	1.20	0.50	3
190A	0.62	1.17	0.55	2
201B	0.45	0.85	0.40	1
201C4	0.00	0.30	0.30	1
201C5	0.00	0.46	0.46	1
201H	0.00	0.29	0.29	2
201Q	0.00	0.25	0.25	2
202E	0.00	1.30	1.30	2
202M	0.00	1.00	1.00	2
202P	0.80	1.1	0.30	2
202P1	0.37	0.47	0.10	2
202S	0.00	0.70	0.70	2
204D	1.00	1.20	0.20	2
205A	2.40	2.80	0.40	2
205B	0.00	0.70	0.70	2
205C	0.75	0.95	0.20	2
205R	0.00	0.40	0.40	1
205T1	0.00	0.20	0.20	1
205U1	0.00	0.40	0.40	1
206A	1.36	1.59	0.23	2
206E	1.90	2.10	0.20	2
206F	0.35	0.80	0.45	2
206F1	0.30	0.55	0.25	2
206G2A	0.00	0.32	0.32	2
206N	0.00	0.20	0.20	2
207H	0.70	1.80	1.10	1
207K1	0.00	0.27	0.27	1
207E	0.80	1.20	0.40	1
207S	0.00	0.25	0.25	2
207M1	0.25	0.50	0.25	1
207P	0.40	0.70	0.30	1

Road Number	BMP-mi	EMP-mi	Mileage	Watershed Classification
207U	0.00	0.70	0.70	2
208C	0.40	0.80	0.40	1
209	3.85	4.10	0.25	1
209G1	0.00	0.20	0.20	1
211	2.66	3.21	0.55	2
211C	0.00	0.55	0.55	2
212B	0.00	0.30	0.30	1
212C	0.00	0.26	0.26	1
213F2	0.00	0.76	0.76	1
214A	0.00	0.41	0.41	1
214F	0.00	0.31	0.31	1
214G	0.00	0.31	0.31	1
216B1	0.00	0.30	0.30	1
219A	1.00	1.50	0.50	1
223A2	0.00	0.20	0.20	1
227A	0.00	0.50	0.50	2
227B	0.00	0.30	0.30	2
230F	0.00	0.60	0.60	2
230G1	0.00	0.40	0.40	2
230I	0.00	0.61	0.61	2
231E	0.00	0.30	0.30	2
231F	0.00	0.30	0.30	1
234	1.88	2.08	0.20	1
234B	0.00	0.95	0.95	2
236B1	0.00	0.50	0.50	2
237A	0.64	1.14	0.50	2
237A1	0.00	0.15	0.15	2
239C	0.00	0.10	0.10	1
244B	0.60	0.80	0.20	1
245E	0.94	1.14	0.20	2
245K	0.28	0.68	0.40	1
247	1.24	1.44	0.20	1
248A	0.00	0.36	0.36	2
249A	0.40	0.70	0.30	2
249A1	0.20	0.40	0.20	2
250A	0.00	0.70	0.70	1
252D	0.00	0.10	0.10	2
256A	0.20	0.67	0.47	2
257B	0.00	0.40	0.40	2
257C	0.00	0.40	0.40	2
258A	0.00	0.80	0.80	1
258B	0.00	0.47	0.47	1
258G	0.40	0.90	0.50	1

Road Number	BMP-mi	EMP-mi	Mileage	Watershed Classification
262	0.90	1.30	0.40	2
263A	0.00	0.40	0.40	1
263B	0.00	0.30	0.30	1
269C	1.00	1.50	0.50	2
269C1	0.00	0.30	0.30	2
269H	0.17	0.47	0.30	1
269U	0.50	0.70	0.20	2
273F	0.00	0.15	0.15	2
274B	0.88	1.08	0.20	2
274I	0.36	0.56	0.20	2
276A	0.20	0.60	0.40	2
275	0.00	0.50	0.50	2
282	0.00	0.72	0.72	2
284	0.00	0.63	0.63	2
293	0.00	0.25	0.25	2
606K	0.00	0.74	0.74	2
607B	0.00	1.60	1.60	2
607C	0.00	0.70	0.70	2
618F	0.67	3.00	2.33	2
625A	0.44	2.10	1.66	2
635C	0.00	1.45	1.45	2
638J	0.06	0.51	0.46	2
638K	0.00	0.09	0.09	2
652	0.00	0.70	0.70	2
654C	0.17	1.80	1.63	2
654F	0.00	0.60	0.60	2
658A	0.00	1.00	1.00	2
661E	0.00	0.20	0.20	2
668B	0.00	0.50	0.50	2
822A	0.00	0.50	0.50	2
827N1	0.00	0.20	0.20	2
835C	0.00	0.60	0.60	2
9100	0.00	1.50	1.50	2
9101	0.00	1.00	1.00	2
9102	0.00	0.60	0.60	2
Total			58.39	